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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/581,707	03/29/2007	David Lee Davidson	06127-PCT-PA (0083.0037)	4893
7590 05/24/2010 HODES, PESSIN & KATZ P.A. 901 Dulaney Valley Road Suite 400 Towson, MD 21204			EXAMINER STANLEY, JANE L	
			ART UNIT 1796	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/581,707	<b>Applicant(s)</b> DAVIDSON ET AL.	
	<b>Examiner</b> JANE L. STANLEY	<b>Art Unit</b> 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 24 March 2010.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-4,7,9,10,13 and 14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4,7,9,10,13 and 14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)         | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

Applicant's reply filed **24 March 2010** has been fully considered. **Claims 1-4, 7, 9-10 and 13-14** are pending: **claims 1-2, 7, 10 and 13** have been amended, **claims 3-4 and 9** are as originally filed, **claims 5-6, 8 and 11-12** have been cancelled, and **claim 14** is new. Applicant's filed (**31 March 2010**) response to the interview conducted on **17 March 2010** (interview summary mailed **26 March 2010**) is acknowledged.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

**Claim 10** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

**Regarding claim 10**, the claim appears to have been inadvertently amended from "80:20 to 20:80" to "60:20 to 20:80". This ratio introduces indefiniteness to the claims as they are directed to a two component mixture and a 60:20 ratio implies additional components may be present. For the purpose of this Office action, the Examiner has interpreted the claim to read "80:20 to 20:80".

### ***Claim Interpretation***

Applicant is reminded that the transitional phrase "consisting essentially of" is construed as equivalent to "comprising" in the absence of a clear indication in the

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specification or claims of what the basic and novel characteristics actually are.

Furthermore, "consisting essentially of" serves only to limit the scope of a claim to the specific materials or steps "and those that do not materially affect the basic and novel characteristics of the claimed invention". The burden is on the Applicant to show that the introduction of additional components would materially change the characteristics of Applicant's invention. (see MPEP 2111.03)

### ***Claim Rejections - 35 USC § 102***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

**Claims 1-4, 7, 10 and 14** are rejected under 35 U.S.C. 102(b) as being anticipated by MSDS "Xylene" (see Material Safety Data Sheet, 02/26/2001, for Xylene, hereinafter referred to as MSDS) as evidenced by Applicant's original specification (page 6).

MSDS teaches that Xylene consists of 75-90 wt% o-, m-, p-xylenes and 10-25 wt% ethyl benzene. As per Applicant's specification, structurally non-identical can be represented by structural isomers such as ortho- and meta-xylene (specification page 6). Furthermore, the xylene isomers are structurally non-identical to the ethyl benzene.

MSDS does not teach the recited cloud points below -100 °C or from -110°C to -175°C, vapor pressure below 827 kPa when measured at +175 °C, vapor pressure at +175°C below 621 kPa, viscosity below 400 cP when measured at the cloud point temperature of the fluid +10 °C or viscosity below 300 cP. However, as the xylene

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isomers combined with the ethyl benzene of MSDS are the instantly claimed structurally non-identical aromatic components, present in the claimed amounts, it is inherent that they would have these properties, absent evidence to the contrary.

**Claims 1-4 and 13-14** are rejected under 35 U.S.C. 102(b) as being anticipated by Carroll et al. ("Ideality and Dissolution Dynamics of Multicomponent NAPL in Groundwater Systems", American Geophysical Union, Fall Meeting 2001, abstract #H12B-0279).

Carroll teaches three component LNAPL solutions of toluene, ethylbenzene and butylbenzene as model Multicomponent mixtures/systems (see abstract).

Carroll does not teach the recited cloud points below  $-100^{\circ}\text{C}$  or from  $-110^{\circ}\text{C}$  to  $-175^{\circ}\text{C}$ , vapor pressure below 827 kPa when measured at  $+175^{\circ}\text{C}$ , vapor pressure at  $+175^{\circ}\text{C}$  below 621 kPa, viscosity below 400 cP when measured at the cloud point temperature of the fluid  $+10^{\circ}\text{C}$  or viscosity below 300 cP. However, as the three component toluene, ethylbenzene and butylbenzene mixture of Carroll are the instantly claimed structurally non-identical aromatic components, present in the claimed amounts, it is inherent that they would have these properties, absent evidence to the contrary.

**Claims 1-4, 7, 10 and 14** are rejected under 35 U.S.C. 102(b) as being anticipated by Haddad et al. ("Physiological Modeling of the Toxicokinetic Interactions in

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a Quaternary Mixture of Aromatic Hydrocarbons”, Toxicology and Applied Pharmacology **161**, 249-257 (1999)).

**Regarding claims 1-4 and 14**, Haddad teaches mixtures of BTEX, i.e. Benzene, Toluene, Ethylbenzene and Xylenes wherein the mixtures comprise 50ppm each of B, T, E and X; 100 ppm each of B, T, E and X; or 100 ppm B and 50 ppm each of T, E and X (abstract; page 249, col 1).

Haddad does not teach the recited cloud points below -100 °C or from -110°C to -175°C, vapor pressure below 827 kPa when measured at +175 °C, vapor pressure at +175°C below 621 kPa, viscosity below 400 cP when measured at the cloud point temperature of the fluid +10 °C or viscosity below 300 cP. However, as the quaternary mixture comprising the three structurally non-identical alkyl benzenes or polyalkyl benzenes of toluene, ethylbenzene and xylenes are the instantly claimed structurally non-identical aromatic components, present in the claimed amounts, it is inherent that they would have these properties, absent evidence to the contrary. It is noted that the transitional phrase “consisting essentially of” has been construed as “comprising” and that applicants have not demonstrated that benzene would materially affect the basic and novel characteristics of the instant invention.

**Regarding claims 7 and 10**, the mixtures of Haddad (see above) as taught as equal amounts of each of B, T, E and X (two examples are of 50 ppm and 100 ppm each, respectively) which meets the instant claim limitation of “wherein there are two structurally non-identical aromatic components” having a weight ratio in the range of

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"from 95:5 to 5:95" and of "from 60:20 to 20:80" (interpreted as 80:20 to 20:80 as set forth above) for ratios between T and E, T and X and E and X.

**Claims 1-4, 7, 9-10 and 14** are rejected under 35 U.S.C. 102(b) as being anticipated by Jain et al. ("Thermodynamics of binary mixtures of alkylbenzenes: Role of orientational order in benzene + alkylbenzene mixtures", Pure & Appl. Chem. Vol 66, No. 3, pp 399-404, 1994).

Jain et al. teaches binary mixtures of benzenes or alkylbenzenes and other alkylbenzenes (abstract, pg 399 para 3) at molar volumes of  $x=0.5$  (abstract; results and discussion, pg 400; table 1). Jain teaches a plurality of examples or mixtures of structurally non-identical aromatic components, specifically noted are the binary mixtures on Table 1 (see page 401) of toluene + ethylbenzene, toluene + n-propyl benzene, toluene + n-butyl benzene, ethylbenzene + n-butyl benzene, ethylbenzene + n-propyl benzene, etc. (Systems no. 8-10 and 14-15).

Jain does not teach the recited cloud points below  $-100\text{ }^{\circ}\text{C}$  or from  $-110\text{ }^{\circ}\text{C}$  to  $-175\text{ }^{\circ}\text{C}$ , vapor pressure below 827 kPa when measured at  $+175\text{ }^{\circ}\text{C}$ , vapor pressure at  $+175\text{ }^{\circ}\text{C}$  below 621 kPa, viscosity below 400 cP when measured at the cloud point temperature of the fluid  $+10\text{ }^{\circ}\text{C}$  or viscosity below 300 cP. However, as the binary mixtures comprising the two structurally non-identical alkyl benzenes and polyalkyl benzenes of Jain are the instantly claimed structurally non-identical aromatic components, present in the claimed amounts, it is inherent that they would have these properties, absent evidence to the contrary.

***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

**Claims 1-4, 7, 10 and 14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Hsu et al. (US 6,086,782).

Hsu teaches heat transfer fluid compositions for low temperature applications comprising at least one terpene and at least one alkylbenzene to obtain a composition that retains the liquid phase at temperatures from about 0 °F to about -175 °F (abstract). Hsu further teaches the at least one alkylbenzene is/are present from 90 to 10% (Hsu claim 1) and are selected from cumene, diethyl benzene, methyl propyl benzene, propyl benzene and butyl benzene (col 9 ln 39-46). It is noted that the transitional phrase “consisting essentially of” has been construed as “comprising” and that applicants have not demonstrated that the at least one terpene would materially affect the basic and novel characteristics of the instant invention.

Hsu teaches using at least one alkylbenzene thus suggesting that more than one of the listed alkylbenzenes can be used in combination to achieve the compositions of Hsu. Hsu does not specifically teach at least two of these alkylbenzenes (note the alkylbenzenes listed are structurally non-identical) used together. However, as Hsu does teach at least one alkylbenzene it would have been obvious to one of ordinary skill in the art to select more than one of the alkylbenzenes taught by Hsu to obtain the instant invention, with a reasonable expectation.



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Hsu does not specifically teach the viscosity when measured at the cloud point temperature of the fluid + 10 °C to be below 400 cP or below 300 cP. However, Hsu does teach that the viscosity does not increase significantly within the working liquid temperature range. As the combination of at least one alkylbenzene made obvious by Hsu is the claimed composition consisting of at least two structurally non-identical aromatic components, it is implicit that the compositions of Hsu will have this property i.e. viscosity below 400 cP, when measured under the claimed conditions, absent evidence to the contrary.

Hsu also does not specifically recite a vapor pressure at +175 °C of below 827 or below 621 kPa. However, as the combination of at least one alkylbenzene made obvious by Hsu is the claimed composition consisting of at least two structurally non-identical aromatic components, it is implicit that the compositions of Hsu will have this property i.e. vapor pressure below 827 kPa, when measured under the claimed conditions, absent evidence to the contrary.

**Regarding claims 7 and 10**, Hsu renders obvious the composition as set forth above.

Hsu does not specifically teach a weight ratio of the structurally non-identical aromatic compounds. However, when faced with a mixture, one of ordinary skill in the art would be motivated by common sense to select a 1:1 ratio, a ratio that falls within the presently claimed amount, absent evidence of unexpected or surprising results. Case law holds that "[h]aving established that this knowledge was in the art, the examiner could then properly rely... on a conclusion of obviousness, 'from common

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knowledge and common sense of the person of ordinary skill in the art within any specific hint or suggestion in a particular reference" (*In re Bozek*, 416 F.2d 1385, 1390, 163 USPQ 545, 549 (CCPA 1969)).

### ***Response to Arguments***

**Claim 10** appears to have been inadvertently amended on line 3 which previously recited "80:20 to 20:80" and now recites "60:20 to 20:80". If it was Applicant's intention to so amend the claimed ratio, Applicant is reminded that proper and compliant claim amending requires underlining newly added text and striking through deleted text.

The objections to **claims 1, 7 and 8** are withdrawn in view of Applicant's amendments to the claims.

The 35 U.S.C. 112, second paragraph, rejections of **claims 1-13** are withdrawn in view of Applicant's amendments to the claims and further, in view of Applicant's submitted 1.132 declaration regarding the term "ponderal ratio" which was found persuasive.

**Regarding the 1.132 declaration:** Applicant's arguments appear to indicate that the 'weight ratio' is in reference to a ratio between the weight % of each structurally non-identical compound as it is present in the composition. However the claims recite only "weight ratio" which could be construed as a ratio of the molecular weights. The Examiner has interpreted the 'weight ratio' as a ratio between the weight % of each structurally non-identical compound in the composition. Confirmation of this interpretation or clarification is requested.

The 35 U.S.C. 102(b) rejection of **claims 1-5 and 7-13** as anticipated by Hsu et al. (US 6,086,782) is withdrawn as a result of Applicant's amendments to the claims. Applicant's arguments have been fully considered but are moot in view of the new grounds of rejection.

The 35 U.S.C. 103(a) rejection of **claim 6** as unpatentable over Hsu in view of Praller et al. (DE 10031020) is withdrawn as the claim has been cancelled.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

### ***Correspondence***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JANE L. STANLEY whose telephone number is

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(571)270-3870. The examiner can normally be reached on Monday-Thursday, 7:30 am - 5 pm, alternating Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on (571) 272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark Eashoo/

/JLS/

Supervisory Patent Examiner, Art Unit 1796